

Berry Springs Water Advisory Committee: Minutes of meeting 2

Date: Friday 17 November 2023

Time: 9.00 am to 5.00 pm

Location: Tanami Conference Room, 25 Chung Wah Terrace and via Microsoft teams

Attendance			
Initials	Name	Position and representation	Attendance
DL	David Liddle	Member, Environmental interests	Meeting room
DB	Doug Barden	Member, Litchfield Council	Online
KP	Kate Peake	Member, NT Farmers	Meeting room
LS	Leonidas Skliros	Member, Irrigated horticulture	Meeting room
PJ	Phillipa Johnson	Member, Irrigated horticulture	Online
Chair	Russell Willing	Chair, Independent	Meeting room
SF	Simon Ferguson	Member, NTG Wildlife Park	Meeting room
Department Environment, Parks and Water Security staff:			
EDWRD	Amy Dysart	Executive Director Water Resources	Meeting room
CEWRD	Missy Frey	Committees and Engagement Officer Water Resources	Meeting room

Apologies		
Initials	Name	Position and representation
BR	Bill Risk	Member, Aboriginal interests - Larrakia
BVL	Bridie Velik-Lord	Member, Northern Land Council
RS	Rena Stanton	Member, Aboriginal interests - Kungarakan
Department Environment, Parks and Water Security staff:		
POWRD	Jamey Shannon	Senior Project Officer Water Management

WRD = Water Resource Division

Key points (provided post meeting)

Environmental values

Adequate protection of the resource requires a clear understanding of environmental values and their tolerance to various levels of water use. There appears to have been limited progress on the fundamental research required to understand these environmental values and their tolerances. The committee clearly identified that this work is of the very highest priority and encourages practical action to ensure this research is undertaken.

Aboriginal and cultural values

The committee also note that very limited progress has been made on actions pertaining to key Aboriginal and other cultural values associated with water. These actions are a high priority for implementation of the plan and the committee request that action be taken on these matters.

Reticulated water infrastructure

Given the limited availability of groundwater in the area, it is imperative that water infrastructure planning for higher density areas proposed in the region (such as the Berry Springs Village Centre) begin. Water provided from elsewhere would reduce pressure on the Berry Springs resource, optimise use for horticultural development and enable the Territory to grow. The committee request that priority be given to consideration of the future water supply for the Berry Springs Regional Centre.

Protection for license holders

Under the "Procedure: Recovery of Unused Licensed Water Entitlements" the "Controller may decide to amend the licence to recover all, or part of, the average unused licensed entitlement or may decide not to recover unused license entitlements". The committee request that approaches be developed to enable the Controller to take into consideration the likely future variability in allocation between years and that in the calculation of quantity of unused water recovered from existing licence holders, the Controller ensure that existing license holders retain an amount of unused water 'a buffer' to ensure the ongoing sustainability of existing commercial licence holders.

1. Meeting open and attendance

Meeting commenced at 9.05 am

1.1 Welcome, attendance and acknowledgement of country

EDWR welcomed everyone to the meeting, acknowledged country and traditional elders, past and present.

WRD met with committee member Rena Stanton earlier in the week to discuss that Aboriginal interested due to Rena advising she would be unable to attend meeting 2.

The agenda was confirmed and members were asked if they had received and reviewed committee papers which members advised they had.

Chair noted those that could not attend, confirmed the meeting quorum and advised that some members would be joining later.

1.2 Conflicts of interest and confidentiality

None declared.

1.3 Previous minutes

Committee members received draft minutes of meeting 1 on 10 November 2023 for review.

Committee advised the following action item was missed from being recorded in the previous minutes: *committee requested copy of presentation delivered by WRD to the NT Farmers Board about 5 or 6 years ago regarding the standing water levels in low and high years in comparison to other Darwin rural areas and aquifers in Berry Springs.*

Action: Water Resources Division (WRD) will ensure that this action item is placed in meeting 2 actions arising.

Committee noted that actions arising were captured as dot points and requested that these be clearly identified so they are not misinterpreted.

Action: WRD will create an 'actions register' which clearly lists all action items.

Committee will be asked to endorse minutes from meeting 1 once the above action items are addressed.

2. Presentations and discussions

2.1 Paul Davey from CDM Smith on the draft review report

Paul informed the committee that CDM Smith was engaged by WRD to undertake the review and provided a presentation to the committee on the Berry Springs water allocation plan review report and discussed the review scope, key findings and recommendations.

Key messages from this presentation include:

- the aquifer provides reliable, good quality water supply for beneficial uses including residents in over 200 households, extensive irrigated horticulture, ecotourism and two commercial hubs
- the plan was declared in August 2016 and expires in August 2026
- the plan specifies the management of groundwater resources that feed springs and pools and defines how much water can be sustainably taken from groundwater resources for consumptive purposes
- the challenges in water management and the process required to balance water use needs and progressively develop sufficient knowledge to build in protections for environmental and Aboriginal and cultural values
- the review undertaken focused on the delivery of the plan objectives, the status of risk in the plan area, compliance with the Act and providing recommended actions to respond to changing conditions
- several legislative and regulatory changes occurred since 2016 which were also incorporated into the review, including:
 - removal of the 15 L/s exemption in the Darwin Rural water control district in 2016
 - introduction of 71M to the Water Act, relating to licence to take water for previously exempt activities
 - Water Legislation Amendment Act 2018 was introduced to amend the Water Act to require mining and petroleum activities to be included in the water licencing framework
 - Water Further Amendment Act 2019 that provided for a new beneficial use category related to Aboriginal economic development and the establishment of an Aboriginal water reserve
- a staged approach is required to achieve the intent of the plan, subsequently the following criteria have been used in this review:
 - achieved: satisfactory controls and system knowledge in place to achieve the intent of the plan objective
 - partially achieved: controls and system knowledge requires further implementation to achieve the intent of the plan objective
- there has been a significant increase in the number of groundwater licences in the plan area, which is a necessary first step and is a significant improvement in the status of the plan area that will allow for more confidence in future management of the resource
- 7,305 ML/yr is currently licenced to be taken, while 2,098 ML is reported use
- approximately 2,000 ML/yr of commercial water use is unlicensed and about half is expected to complete the transition to licencing during 2023-2025
- the known connectivity between groundwater and surface water in the plan area means that groundwater extraction reduces dry season flows in Berry Creek and the Darwin River. Using the groundwater model, flow reduction at Berry Creek's, Marsh Fly, is the order of 50% at the end of the dry season. Similar reduction in dry season flow in the Darwin River is inferred

- to date there hasn't been specific studies in the plan area to support the understanding of the groundwater dependent ecosystems function and associated ecological endpoints that could form the basis of quantitative performance indicators of the ecosystem. Without having established these indicators, it is difficult to establish if the ecosystems are being impacted due to the groundwater extraction regime
- the legal requirements of the plan were reviewed and two components were not achieved:
 - the maximum licence entitlements marginally exceeds the estimated sustainable yield in the amount of 185 ML/yr or 2%, based on 80% of lows being required to sustain the environment. This is a result of transitioning previously exempt groundwater extraction into licenced use. The process for licensing historic use is ongoing and in many cases has resulted in granted entitlements being in excess of what was, and is, actually required
 - there is no Aboriginal water reserve allocation in the plan, this is because the legislative requirements came into effect in 2019 after the plan was declared
- of the 42 actions in the plan, 12 actions have been identified as high priority in the review report.

Discussions arising:

- clarification on section 71M of the Water Act: as of 1 August 2023 commercial groundwater users in Darwin rural who were previously exempt water users and have been extracting water since 2015 will need to be licenced. There is a 2 year timeframe for the transition. This change will ensure water usage information is available for management of the resource by measuring and managing commercial groundwater take in the Darwin rural area
- disruption to environmental flows: there was discussion that recent road works in the area has modified flows into Lake Deane. Some thought holding water in the area longer might actually improve water penetrating into the aquifer
- clarification on the Aboriginal water reserve (AWR): the establishment of a AWR is identifying eligible land through the *Aboriginal Land Rights Act* which is exclusive possession native title or freehold or leasehold land held by an Aboriginal organisation for Aboriginal benefits. The land must be larger than 1 hectare and water allocation is capped at 30% of the available consumptive pool. At this stage the AWR in Berry Springs is notional but water can be recovered through the Recovery of unused licensed water entitlements policy
- difference between culture values and the AWR: the AWR is water available in the consumptive pool for economic development, cultural values refers to Aboriginal cultural significance values related to the water resource, and may include in environmental flows prior to the estimated sustainable yield
- the 80/20 rule: the 80/20 was applied in the 2016 water allocation plan where 80% of the water resource is to stay in the environment and 20% can be allocated for various uses. This allocation is in accord with the Northern Territory Water Allocation Planning Framework as the contingent allocation in the absence of directly related research to support a different allocation.

The committee would like it recorded that:

- they support and encourage research to be undertaken on the environments minimum requirements for groundwater
- in history the weir has dried up in times where there was no development, it may not be an indicator of overuse we are looking for. Evidence of these events should be sourced and made clear in any review of the plan.

Action item: committee would like to see photos of the weir in the 1950-1960's when it was dry.

2.2 Presentation by Dale Cobban on what we know of the resource

Dale is the Senior Water Resources Modeller and the presentation being delivered today was also presented at Water in the Bush in October 2023.

Key messages from this presentation include:

- overview of the resource noting that the dolostone aquifer is 72 km² in size and most of the usage is in the centre between Berry Creek and Darwin River. As some of the springs are tidal it is difficult to monitor their flows. There are 471 bores in the area with usage in 2023 of 9,164 ML/yr, this information is modelled to ensure usage does not exceed 20% of the water resource based on the 80/20 rule (combination of licenced and unlicensed)
- hydrostratigraphy shows that there are two layers and the lower dolostone layer holds water like a bathtub and comprises of a single aquifer. There are sinkholes in the region with one forming in the south in 2014 which is 21 meters deep and strong evidence suggests it is directly connected to the aquifer
- WRD uses satellite images to analysis vegetation mapping, this allows the mapping of areas that have access to water through a groundwater system or are high water users
- water samples are taken at Marsh Fly (downstream for where the pools are and people swim at Berry Springs) to assess the quality of water. If the enterococci level are at 500 counts/100 ML the pools will be closed for public use as it is not safe. CDU did an analysis in 2019 using eDNA of the microbiological and found that it was predominantly bat faeces causing the bacteria. WRD will continue to track this data
- WRD have a groundwater model for the Berry Springs Dolostone, which was developed in 2016. It is a calibrated numerical model to provide a 3 dimensional mesh of the aquifer. Logger data goes back to the 1960s providing the opportunity to analyse data on groundwater flows from pre development to the currently water use. The groundwater model allows WRD to predict flows at maximum extraction. Water from the areas furthest from the springs is replenished every year but takes approximately 17 years to transition through the aquifer to the springs so these areas could potentially sustain higher levels of extraction. Once all users are licenced there may be the opportunity to encourage further development in certain areas where there would be little impact on the springs and to encourage people to move bores from high impact areas
- the Darwin Rural Water Regulation Strategy 2023-2026 commenced in mid-2023 and supports the legislative changes and includes complementary tools such as reassessment of water resources and the recovery of unused water. There are 12 groundwater management zones in the strategy and Berry Springs is one of the zones.

Action items:

- copy of the presentation delivered by Dale to be sent to the committee
- committee would like to see the full groundwater model graph from the 1960s to date
- send the committee a copy of the study undertaken by Peter Jolly in 2000 which explains how much rainfall is required to fill the aquifer to a support point for the springs to flow and what is then discharged.

2.3 Discussion by Amy Dysart on WRD updates

Amy Dysart the Executive Director of the Water Resource Division provided the committee an update on improvements which have occurred since the committee last met.

State of the Water Resource

WRD will be commencing annual reporting on each water allocation plan and one has been developed for Berry Springs for the 2022-2023 financial year. The annual report provides information about the current

status of the water resource and how the water is shared and used. This report will be available to the public early in the new year.

Committee commented that it would be useful for the report to state how much is entitled through licences compared to how much is actually being used.

Action item: send the committee a copy of the state of the water resource once finalised.

Improved structure of water allocation plan documentation

The new structure of planning documents is: the water allocation plan, a background report and then implementation actions. The plan defines the rules and this is supported by background information about the status of the resource and the implementation actions, which is the commitment on the ongoing management of the resource. The Berry Springs Water Allocation Plan is in the previous format.

The legislative requirements for a water allocation plan in the Act is to produce a water allocation plan which defines an estimated sustainable yield for the resource, allocate water to the Aboriginal water reserve and allow for trade. There is no requirement for the ongoing management of the water resource to be a part of the water allocation plan as this is outlined in section 34 of the Act about managing the resource.

The review report that CDM Smith have created provides advice on priority actions and the key items to be achieved. WRD will be working with the committee to develop the next water allocation plan and will be changing to the new planned documentation format.

Updates to the webpage

The WRD webpages have been updated to improve the flow of information. There are now clear sections on the Act, water control districts, water allocation plans and education materials including videos.

Plan areas each have their own page, which describes the water resource, the Aboriginal water reserve, the advisory committee and water licences.

Action item: send the committee a link to the water licence portal for the Berry Springs region which shows both groundwater and surface water licences.

Discussions arising:

- reticulated water to Berry Springs and South Port: possibility of having water from Darwin River dam available to Berry Springs residents. This would reduce the amount of water taken from the aquifer and enable further economic development in the region. The committee mentioned that government had committed to building a district centre in Berry Springs but this has not occurred to date, this development would require reticulated water to be available
- Controller of Water Resources (COWR): the terms of reference advise that the committee can provide advice to the COWR. As there is now an independent COWR appointed in May 2023, that position is responsible for making decisions on water licences. It is the Minister who makes decisions regarding water allocation plans.

Lunch break

3. Committee feedback on the review report

3.1 Implementation actions

The committee reviewed table 5-2 high priority implementation action by category. It was decided to place a priority on the implementation actions from high to low.

Outcomes of water sharing	Updated Actions	KPI	Timeframe	WAC Priority
Maintaining groundwater levels and water quality				
1.1.1 The amount of water needed to support consumptive uses continues to be met	(A1) Regularly monitor regional rainfall, stream flow, groundwater levels and groundwater/surface water quality	Monitoring completed and data available Public Annual status of the resource report	Annually	High
1.1.2 The quality of water sourced for consumptive uses is maintained	(A3) Conduct comprehensive water quality sampling across the aquifer (including nutrients and farm chemicals)	Monitoring completed and data available	Post-2026	Low
Improving management of the aquifer				
1.2.1 All groundwater use is accounted for and managed under the plan	(C1) Licence all commercial water use – legislative change for 2 years to complete transition	All commercial water use is licensed and metering is established	Pre-2026	High
1.2.2 Ensure the WAP is meeting the objectives of groundwater management	(C1) Undertake a WAP review - completed in November 2023	WAP review report completed	Pre-2026	Medium
1.2.3 Key knowledge gaps are identified, and work undertaken to increase the knowledge of the water system	(A6) Undertake a hydrogeological assessment program to improve ecohydrogeological conceptual model of the area	Hydrogeological assessment report completed	Pre-2026	Medium
1.2.4 Education of broader community about the plan, and its role in managing the aquifer	(C4) Produce educational material about water planning and the aquifer and introduce incentives to encourage efficient water use	Monitoring data and educational material accessible to community Public Annual status of the resource report	Pre-2026	High/ Medium
Protection of the environment				
1.3.1 There is an improved understanding of ecosystem function and environmental values	(B4) Improve knowledge of spring and baseflow ecohydrological requirements	Determine baseflow requirements Investigate additional legislative mechanisms to provide groundwater protection zones in the area	Pre-2026	Very high

Outcomes of water sharing	Updated Actions	KPI	Timeframe	WAC Priority
1.3.2 The condition of groundwater dependent ecosystems is known and monitored as far as practicable and accounted for in water planning and licensing		GDE probability map completed	2025	Very high
1.3.3 Key environmental values are appropriately accounted for in water planning and licensing	(B6) Develop triggers and thresholds for Berry Springs to protect ecosystem value & function	Triggers and thresholds developed	Post-2026	High
Aboriginal and other cultural values associated with water				
1.4.1 There is an improved understanding of Aboriginal cultural values and other cultural values associated with the water resource	Information sharing with broader community about the water resource	Aboriginal Ecology Signage at Berry Springs and Territory Wildlife Park	Pre-2026	Medium
1.4.2 Key Aboriginal cultural sites that rely on water are monitored and potential impacts on such sites are appropriately accounted for in water planning and licensing	(B5) Develop and implement programs to monitor health of key water dependent ecosystems and cultural places that are vulnerable to change due to water extraction	Monitoring completed	Post-2026	Medium
Water for sustainable development in the region				
1.5.1 Water is available to support sustainable economic development in the region	(C14) Review and advise on the sustainability of proposed water resource use by regional development projects NEW Understand the reasonable buffer required in water licenses to account for seasonal variation of water requirements for irrigation NEW Partner to improve estimate of crop water requirements and opportunities for water efficiency	Development projects reviewed from sustainability perspective	Ongoing	Medium

Action items:

- WRD to deliver a presentation to the committee at meeting 3 on a review of stock and domestic use. There are two components that have been undertaken, a review on stock methodology and a review of domestic estimates
- 1.2.4 Improving management of the aquifer: the annual state of the water resource is educational/engagement material and this should be included in the KPIs

- 1.3.1 Protection of the environment: there needs to be an understanding of the ecosystems and environmental values before you can monitor the resource
- 1.3.2 Protection of the environment: groundwater dependent ecosystems definition will be applied in water management documentation
- 1.4.1 Aboriginal and other cultural values associated with water: KPI should be updated to reflect Aboriginal cultural site of value and cultural values and include identification and documentation. First steps of the process have been updated in section 1.4.1
- 1.5.1 Water for sustainable development in the region: determine the buffer required to sustain industries in their current state when restrictions are put in place, and included the efficiency project that was undertaken in partnership with NTG – this has been integrated as new actions in section 1.5.1

Discussions arising:

- recovery of unused water: there should be a buffer put in place to protect licensees if they are going to lose some of their water through the recovery of unused water policy. Most of the users licenced are commercial growers and in the event of a dry period where their allocated water is reduced further their business viability could be affected
- communications: the committee is considering writing to the Minister to inform her of some of the items they see as key issues that need to be addressed, in particular, funding for research to be undertaken for environmental and cultural needs. These messages are included at the start of these minutes
- the committee encourages the WRD to actively seek opportunities to undertake environmental flows research whether that be keeping the idea top of mind for relevant researchers or actually applying for any available funding to undertake the work.

4. Meeting summary

Committee advised that they would like to meet regularly.

4.1 Next meeting

Next meeting to be scheduled for March 2024 for half a day.

Items for the agenda include:

- presentation on stock and domestic use review
- discussion of the annual state of the water resource and advice from committee on any improvements

4.2 Closing comments

The Chair thanked members for their input throughout the meeting.

Meeting closed at 4.00 pm

Actions register

Actions items arising from meeting 1				
No.	Action	Action officer	Comments	Status
1	Work program and schedule to be revised and send to members for further feedback	WRD/Chair	Review complete – Department will reset the schedule for the committee from until expiry of the plan Aug 2026	March 2024 WAC meeting
2	Information to be developed that clearly explains that the use of the resource is exceeding the consumptive pool	WRD	Review report outline current statistics – noting that legislative changes will complete the transition of previously exempt users into regulatory framework	Completed
3	Topics identified to be addressed at meeting 2:			
	a. The potential for a reticulated water supply to minimise pressure on the resource	WRD	Further discussion at next WAC meeting about estimating domestic use will inform the additional water that may be available	March 2024 WAC meeting
	b. The need for greater clarification between Aboriginal cultural water and other defined cultural uses of water	WRD	Part of the new structure of water allocation plans is clearer on this to be adopted in the new plan	Next plan
	c. Water use volumes, comparison of licensed vs unlicensed and breakdown by beneficial use and how these are determined, especially with regard to stock and domestic consumption estimates	WRD	Review report outline current statistics – noting that legislative changes will complete the transition of previously exempt users into regulatory framework	Completed
	d. How the Department intends to manage unlicensed use in the Darwin water control district	WRD	The 2023 legislative changes and the Darwin rural water regulation strategy 2023-26	Underway
	e. Relationship between groundwater level and springflow	WRD	Presentation on the modelling demonstrating predictions and results with high correlation	Completed
	f. Description of how longer term climate datasets will be used to determine the impact on the estimated sustainable yield	WRD	This is an ongoing consideration that is integrated into future plan development	Next plan
	g. Rate of increased stock and domestic use and what is used in existing modelling?	WRD	Review report outline current statistics – noting that legislative changes will complete the transition of previously exempt users into regulatory framework	Completed
	h. Opportunity to create a reportcard to engage the community to play a bigger role in making changes to sustain the resource	WRD	In draft and will be released to public in early 2024 Copy will be provided to the committee	In progress
	i. Tools the Department intend to use to improve transparency and knowledge	WRD	Webpages have been updated to be user friendly and provides clear information	Completed
j. Extent and significance of unlicensed horticultural and cultural (domestic use beyond that permitted under section 14 of the Act) use	WRD	The 2023 legislative changes and the Darwin rural water regulation strategy 2023-26	Underway	

	k. Should the Berry Springs and Darwin River catchments be considered as separate resources in the plan?	WRD	This will be considered in the development of the next plan – however considering the relatively small size of the resource this is not likely	Next plan
Actions items arising from meeting 2				
No.	Action	Action officer	Comments	Status
4	Provide committee with a copy of the presentation regarding water levels and aquifers in Berry Springs	WRD	CEWRD to source presentation	In progress
5	Provide committee photos of the weir when the resource was dry in the 1950's or 1960s	WRD	CEWRD seeking photos, year may be 1962	In progress
6	Presentation delivered by Manager Water Resources Modelling to be sent to committee members	WRD	CEWRD emailed committee members on 18/12/23	Completed
7	Send the committee full groundwater model graph from the 1960s to date	WRD	CEWRD emailed committee members on 18/12/23	Completed
8	Study undertaken by Peter Jolly in 2000 to be sent to the committee	WRD	CEWRD emailed committee members on 18/12/23	Completed
9	Email members a copy of the 2022-2023 state of the water resource report for Berry Springs	WRD	CEWRD emailed committee members on 18/12/23	Completed
10	Committee to receive a copy of the link to the water licence portable for the Berry Springs region which shows both groundwater and surface water licences	WRD	CEWRD emailed link on 28/11/2023	Completed
11	Presentation to the committee on a review of stock and domestic use	WRD	Presentation will be delivered at meeting 3	In progress
12	Update the implementation actions in the review report: a. 1.2.4: the annual state of the water resource is educational material and this should be included in the KPIs	WRD/CDM Smith	In KPI for the Department budget appropriations Review report updated	Complete
	b. 1.3.1: there needs to be an understanding of the ecosystems and environmental values before you can monitor the resource	WRD/CDM Smith	Highest priority for water advisory committee and reflected in review report Review report updated	Complete
	c. 1.3.2: clarify how groundwater dependent ecosystems are defined	WRD/CDM Smith	GDE mapping is underway Review report updated	Complete
	d. 1.4.1: KPI should be updated to reflect Aboriginal cultural site of value and cultural values and include identification and documentation	WRD/CDM Smith	More specific and achievable actions added to actions in review report	Complete

	e. 1.5.1: determine the buffer required to sustain industries in their current state when restrictions are put in place, and included the efficiency project that was undertaken in partnership with NTG	WRD/CDM Smith	More specific and achievable actions added to actions in review report Review report updated	Complete
13	WRD to seek opportunities encourage research in Berry Springs environmental flow requirements	WRD	List of discussion with researchers Applications for research funding	
14	WRD to liaise with other relevant agencies to identify the importance of seeking alternative water supplies to enable development of proposed urbanisation and high intensity uses in the Berry Springs Regional Centre	WRD	Number of meetings where the issue is raised/considered. Feedback to committee	

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